CENTER FOR RAMAN TECHNOLOGY

CENTER

This Center was established in 1996 to commercialize Raman technology for chemical monitoring in natural gas, metal processing, and medical applications. Recent advances in instrumentation have made Raman scattering attractive as a general purpose analytical technique for measuring chemicals in solid, liquid and gaseous samples. Raman spectroscopy is the measurement of the wavelength and intensity of inelastically scattered light from molecules. The Raman scattered light occurs at wavelengths that are shifted from the incident light by the energies of molecular vibrations. Typical applications are in structure determination, multicomponent qualitative analysis, and quantitative analysis. The Center of Excellence for Raman Technology is a research Center committed to finding new applications for Raman Spectroscopy. We are currently developing External Cavity Laser Diodes for use with these Raman systems. The focus of the Center is to develop and test new designs and methods for using Raman Spectroscopy in a wide variety of settings. Currently work is being done on applications into different gas monitoring systems.

TECHNOLOGY

The technology development is focused in the following areas: laser diode configuration, sample handling schemes, fiber coupling techniques, data-analysis algorithms and modifications to the core Raman detection systems.

ACCOMPLISHMENTS

The Center has submitted nine invention disclosures in the following areas: glucose monitoring, frequently diversity, external cavity laser diode, mucosal cell, neural network analysis, liquid enhancement cell, egg reflector cell, fiberoptic coupling and holographic feedback element. The Center has developed effective collaborations with companies in steel, medical and energy industries, and has been successful in attracting several research and development contracts.

CONTACT

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Can you Imagine...

. . . a sensor installed in the smokestack of a steel mill that provides real-time monitoring of stack gas constituents and controls the steel making process to minimize exhaust pollutants?

RAMAN SPECTROSCOPY IS A METHOD FOR ANALYZING THE CHEMICAL CONSTITUENTS OF SAMPLE MATERIAL BY DETECTING THE WAVE LENGTH OF LIGHT EMISSIONS GENERATED BY MOLECULAR VIBRATIONS IN THE SAMPLE.

Raman Spectroscopy
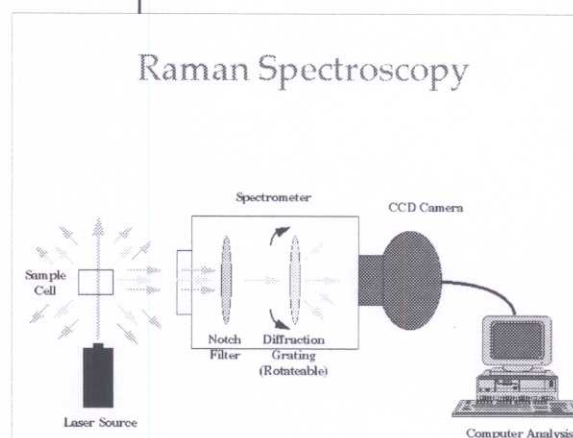
■ Block diagram of typical Raman Spectroscopy sampling system.